Sri Muthu Narayanan Balasubramanian

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Personal Data

Address: 13A Willem de Zwijgerstraat, 5611 JK Eindhoven
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Date of Birth: 17 November 1991
webpage: srimuthu.github.io

Academic Background

Current — **Masters in Embedded Systems** (Networking stream)
Aug 2015 — Eindhoven University Of Technology
Courses : System Validation, Architecture of Distributed Systems, Networked Embedded Systems Internet of Things, Embedded Computer Architectures, Parallelism Compilers and Platforms,

2009-2013 — **Bachelor of Engineering in Electrical and Electronics** **GPA: 8.2/10**
College of Engineering Guindy (CEG), Anna University, Chennai
Senior Year Thesis : Condition monitoring and fault diagnosis of Induction motors
- Sensor data acquisition, Feature extraction & trend analysis for fault prediction in industrial induction motors.
- Cost effective monitoring and proactive warning system to minimize downtime. (10/10 points for the thesis.)

2007-2009 — Higher Secondary Education **Aggregate: 97.58%**
SRV Boys Higher Secondary School, Namakkal

Professional Experience

July 2013- July 2015 — Associate Engineer- Caterpillar Inc., Chennai
Electronics and Systems Integration Division - India
Application software and Test Automation developer for Display and Transmission ECUs of Articulated trucks and Motor graders

May 2012 — Summer Intern- Insystronics Technologies, Chennai
Embedded product design
Software design and development for a prototype Tire Pressure Monitoring System (TPMS) for budget cars in association with a team from TATA ELXSI

Projects

Projects at TU/e

GPU parallelization for a mock bit-coin mining application - Implemented using CUDA C
Parallelization of the AES encryption algorithm - Using OpenMP **Wireless Sensor Network for In-Vehicle applications** - Simulated using Contiki & COOJA
VLIW architecture for AES encryption application - developed on a SiliconHive processor
Internet of Things based smart parking spot - Client/Server implemented on CoAP/UDP (LWM2M)
Electronic Design Automation - High Level Synthesis for image convolution using Vivado.

Projects at Caterpillar inc.

Data Link simulator for Hardware-In-Loop (HIL) simulations Jan '14 to Oct '14

- Worked on a research project in developing customized data link simulator with multiple protocol support (including CAN/J1939 public and proprietary protocols) for HIL simulations during software development and testing of ECUs (Electronic Control Units).
- Worked on the implementation using Zero Message Queue (ZMQ) high performance asynchronous messaging library.

Display ECU Test automation Nov '13 to July '14

- Proposed and Spearheaded the project for automation of the HIL testing of Display ECUs.
- Developed the entire automation framework for onscreen data capture and data link validation using custom OCR software & Python (80% increase in quality and velocity | $21k cost savings).

Self Funded Projects

Rubik's cube solver	Mechanical 3x3 Rubik's cube solver; Algorithm implemented on Raspberry Pi using OpenCV-Python
Self adjusting podium microphone	Implemented face detection and tracking using Haar cascades in OpenCV to achieve autonomous height and lateral adjustment of podium mic
Automated 4-DOF Robotic Arm	A wirelessly controlled autonomous arm capable of drawing basic shapes and letters, modeled in SIMULINK and implemented using Arduino and Xbees
Automated Guided Vehicle	Worked on motion planning and electronic control for an autonomous self-guided industrial robot

Software Skills

Over 10000 lines	C, Python
Over 5000 lines	C++, VBA
Familiar	VBA, Java, HTML5
Simulation & modeling:	MATLAB, Vivado & Vivado HLS, Vector Tools (CANalyzer/CANoe)
Version Control :	IBM Rational Clearcase, GIT
Platforms:	Windows, Linux (Ubuntu & Raspbian distributions)
Miscellaneous:	Pspice, DesignSpark PCB, OpenCV, OpenMP, CUDA, LaTeX

Languages

Tamil :	Native Language
English :	Full Professional Proficiency
	TOEFL: 117/120 , **GRE:** 329/340 (Q:167 V:162 Analytical Writing:5.0)
Hindi :	Intermediate(Speaking) Basic(Writing)

Extra-Curricular Activities

- **Co-founder of Illuminati**, a tech hub for spreading technical knowledge through workshops
- **President** of The Robotics Club of CEG | **Student Director** at the CEG Tech Forum | **Secretary** of the light music orchestra of CEG
- One of the founders of a **social initiative** called **"Mithr"** at Caterpillar, providing academic support to underprivileged children

Awards and Certifications

- **6 Sigma Green Belt** certificate holder and trained in AGILE Mindset & Practices
- Competitively awarded the sponsorship for a project by The University Grants Commission (UGC)
- Recipient of **Government of India Scholarship** for undergraduate education and the Medal of Honor for securing 100% score in Mathematics and Physics examinations
- Holder of **Performer's Certificate** (Grade 7) in Digital Keyboard, **Trinity College of music**, London

References

Available upon request